PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

07 APR 2005

Applicant's or agent's file reference METSO9APCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI 03/00745	International filing date *(day/month/year)* 08.10.2003	Priority date *(day/month/year)* 09.10.2002
International Patent Classification (IPC) or both national classification and IPC D21H21/24		
Applicant METSO PAPER, INC. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

I	☒	Basis of the opinion
II	☐	Priority
III	☐	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	☐	Lack of unity of invention
V	☒	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	☐	Certain documents cited
VII	☐	Certain defects in the international application
VIII	☐	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
03.05.2004	21.02.2005
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Naeslund, P Telephone No. +49 89 2399-8614

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/FI 03/00745

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-8 as originally filed

Claims, Numbers

1-6 received on 18.10.2004 with letter of 18.10.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).

   ☐ the language of publication of the international application (under Rule 48.3(b)).

   ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   ☐ contained in the international application in written form.

   ☐ filed together with the international application in computer readable form.

   ☐ furnished subsequently to this Authority in written form.

   ☐ furnished subsequently to this Authority in computer readable form.

   ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   ☐ the description, pages:

   ☐ the claims, Nos.:

   ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-6
	No:	Claims	NONE
Inventive step (IS)	Yes:	Claims	NONE
	No:	Claims	1-6
Industrial applicability (IA)	Yes:	Claims	1-6
	No:	Claims	NONE

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

DA: WO-A-03018638 (P)
DB: WO-A-0212620

1. Document **DB** (see figure 2, in particular reference signs 549 and 548 with corresponding parts in the description; claim 12) describes a method for manufacturing a web of paper or paperboard sized (coated) on both sides and inherently comprising all features of the preamble of present claim 1. There is no explicit disclosure in **DB** of a draw between the press section and the first dryer cylinder group of the dryer section. However, such a draw (in particular within the range as required by present claim 1) is for evident reasons always present between the press section and the first dryer group of the dryer section in paper machines of this kind: if not it would soon come to an accumulation of wet paper web in this limited space leading to a rupture of the web and as a consequence a shut down of the machine.

   Thus, claim 1 only differs from the teaching in **DB** in that it comprises the additional requirement that the ratio of dry solids to the size components and liquid are different from each other. However, it goes without saying that the skilled person by no means is obliged to treat both sides with sizes of the same dry contents. On the contrary, in view of the fact that the sides are not treated nor intended to be used in the same way in the **DB** disclosure the skilled person would likely arrive by a pure routine optimization at sizes of a different dry contents in order to control the degree of curl. NB: It pertains to general accumulated knowledge in the field that curl can be controlled by regulating the dry matter of the surface sizes; see e.g. **DA**, page 10, lines 11-19.

   Therefore, the subject-matter of independent claim 1 is not inventive; Art. 33(3) PCT.

2. There is a discrepancy between the wordings "at least one surface" in the preamble

and "to the two sides of the web" in the characterizing part of claim 1; Art. 6 PCT.

3. The numbering of the claims is not in a consecutive order. It is assumed that present claims 4,5 and 6 should read 5,6 and 7, the latter of which is hereinafter applied.

4. With regard to the additional substance in dependent claims 5 and 7, the ranges recited would only appear to relate to a direct outcome of a limited number of trials by the skilled person.

5. A brightener, as added to the size furnish according to claim 6 is a conventional additive; no particular effects can be seen.

6. The additional subject-matter of claims 2-4 is well-known in the field.

7. For the assessment of the present claims on the question whether they are industrially applicable, no particular reasoning would appear necessary to give. The industrial application would appear to be evident (Art. 33(4) PCT).

8. Upon entering the national/regional phase, pre-published cited prior art should be mentioned in the description. The description should be adapted to the amended claims.

9. Document **DA** is published in the priority period of the present application and might constitute an earlier national/regional right. No check has been made as to the validity of the priority claim in the present application. This document appears to disclose all essential features (in particular "the draw", "the solids content", "the difference in dry solids content" and "curl" - features) of present claim 1; see in particular page 10, lines 11 to page 11, line 4, claim 1.

What is claimed is:

1. A method for controlling the curl of a web of paper or paperboard, the method comprising the steps of

- forming a base web,
- drying the base web on the press section of the papermaking machine,
- drying the base web further on the dryer section of the papermaking machine,
- setting a base web speed differential, or draw, between the press section and the first dryer cylinder group of the dryer section,
- surface sizing at least one surface of the web,
- the draw is set to 3 % maximum, and
- a surface size furnish is applied having a solids content of at least 15 % of the total amount of size components and liquid in the furnish,

characterized in that

- in the size furnishes applied to the two sides of the web, the ratio of dry solids to the size components and liquid are different from each other.

2. The method of claim 1, **characterized** in that the amounts of size furnish applied to both sides of the web are equal but the amounts of water imported to the two sides of the web are different.

3. The method of claim 1, **characterized** in that the amounts of size furnish applied to both sides of the web are different but the amounts of water imported to the two sides of the web are equal.

4. The method of claim 1, **characterized** in that both sides of the web are treated and to at least one side of the web is applied a surface size furnish wherein the proportion of size components in the total amount of size components and liquid is at least 15 % and the ratio of size solids to the total amount size and liquid in the size furnish applied to the two sides of the web are different from each other.

4. The method of claim 1 or 3, **characterized** in that a surface size furnish is used wherein the proportion of size components in the total amount of size components and liquid is at least 20 %, advantageously 25 %.

5. The method of claim 1, **characterized** in that the draw is set to 1 - 2%.

6. The method of any one of foregoing claims, **characterized** in that a brightener is added to the size furnish.